



The MacArthur Maze is a well-known San Francisco Bay Area freeway interchange. Three interstates come together: I-80, I-880, and I-580. With its location next to the Port of Oakland, and leading to and from the San Francisco-Oakland Bay Bridge, the aptly named Maze is very congested.

Caltrans photo by John Huseby



Freight Route Bridges Top SB 1 Fix-It List

Work to Start on 30 Interstate Spans That Don't Meet Height, Weight Standards

Caltrans has added 30 bridges on several of California's most important freight corridors to its fast-track schedule for improvements or replacement under Senate Bill 1.

The spans along freight-critical junctures on Interstate 80 in Northern California, and I-5 in Southern California merited inclusion on Caltrans' Accelerated Bridge Delivery schedule, and earlier funding to begin the project delivery process, the California Transportation Commission recently decided. The CTC is scheduled to consider adding another 30 to the accelerated list in October.

The 30 bridges authorized — 18 in Southern California and 12 in the Bay Area — will be the first to receive SB 1 funding for bridge repair or replacement. The Road Repair and Accountability Act of 2017 specified that 500 bridges would be fixed in the next decade, as will other parts of the state transportation system, with extra revenues from higher fuel taxes and new road improvement fees.

Almost \$34 million will be spent to perform environmental and engineering studies necessary for the I-5/I-80 bridge projects to proceed. The work on these bridges will involve expanding vertical clear-

ances to current standards, or improving load-carrying capacity, depending on the deficiency.

The bridges are located on routes deemed critical to the movement of goods and services throughout the state. I-5 and I-80 link California's ports with markets inside the state and throughout the nation; about one-third of California's \$2.2 trillion economy depends on freight movement.

But because the older bridges don't meet current height or weight standards, trucks carrying larger or heavier loads are forced to make lengthy detours around them. This results in lost revenues, higher costs, more greenhouse gas emissions from longer trips, traffic impacts, and damage to infrastructure not constructed to interstate pavement standards.

The cost for fixing all 30 bridges is estimated at about \$737 million. The most expensive repairs are projected for the series of spans on I-5 in the Los Angeles area, where initial estimates call for investing \$130 million to bring 10 bridges up to modern standards by either lowering the roadways or outright replacement to create more vertical space, or fortifying the structures.

The other two bridges in Southern California that

need work are on I-5 near the Grapevine in Kern County. More vertical clearance is required where the interstate separates from Highway 99, while another span near the California Aqueduct needs widening and a new surface.

In Northern California, six of the major projects will be clustered on I-80 near the port of Oakland, which is the fourth busiest port in the nation. An estimated \$22 million is needed to improve vertical clearance at the MacArthur Maze interchange where I-80, I-580 and I-880 meet. An I-80 overpass in Berkeley has the same issue that will cost \$12 million to fix, while farther east on the interstate in Vallejo, a bridge structure must be replaced to permit heavier truck loads at the I-80/State Route 29 separation, an estimated \$7 million project.

Six more bridges between the Carquinez Bridge Toll Plaza and Vallejo are scheduled to undergo ver-

tical clearance work to comply with a 16 ½ foot interstate standard. The estimated cost for that project is almost \$16 million.

Two bridges on I-5 in the Lathrop area that see heavy truck traffic also are on the project list. Structure strengthening is proposed on both to accommodate heavier loads, at a cost of almost \$4 million.

To further expedite some of the 30 projects under SB 1, Caltrans will weigh alternative project delivery methods that could cut more time from the process. Even with an accelerated timetable, however, construction still isn't slated to start for the major projects in Los Angeles and Bay Area until 2020 or 2021. **MM**

Source: Caltrans Division of Maintenance

Caltrans Keeps Close Eye on Bridge Condition

Inventory is Aging, but New Funds Will Repair, Upgrade Many Spans to Higher Standards

Caltrans maintains a vigilant bridge inspection program to ensure the safety and structural integrity of the 13,100-plus bridges in the state that it maintains.

Just in the last fiscal year, from July 1, 2016-June 30, 2017, Caltrans' Structure Maintenance & Investigations unit conducted 11,430 inspections as part of a rotating review process of all bridges on the state and local highway system in California.

Maintaining the health of the bridge network is a critical responsibility in Caltrans' management of the state highway system. In total, the Department monitors more than 245 million square feet of bridge deck area, which encompasses the length and width of the roadway area of the supporting structure.

And that inventory is getting older. The average age of a bridge in California is 45 years, and maintenance needs for the aging structures is increasing. In the last four fiscal years, about \$696 million was spent on repair, or replacement, of state-owned bridges, with the federal government paying almost \$596 million of that amount.

That amount will increase in the coming years as revenues begin to flow from the Road Repair and Accountability Act of 2017 (Senate Bill 1). The new law requires

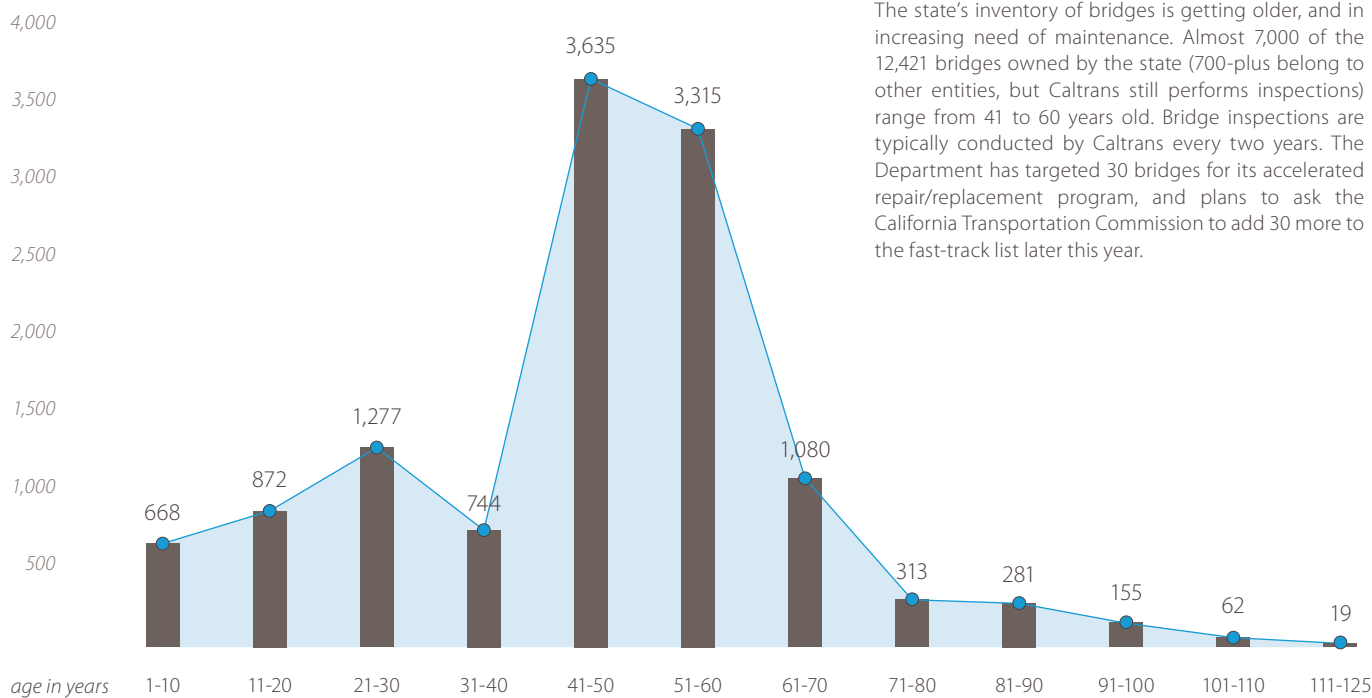


The State Highway 20 Meridian Bridge, a Colusa County drawbridge built in 1977 over the Sacramento River, is swung open for its annual inspection in 2014.

Caltrans to fix, or replace, not less than an additional 500 bridges in the next decade to reach new performance targets established by the Department's 2017 State Highway System Management Plan.

The plan applies a good/fair/poor standard in evaluating Caltrans-maintained bridge deck areas. By 2027,

California State Bridges by Age



The state’s inventory of bridges is getting older, and in increasing need of maintenance. Almost 7,000 of the 12,421 bridges owned by the state (700-plus belong to other entities, but Caltrans still performs inspections) range from 41 to 60 years old. Bridge inspections are typically conducted by Caltrans every two years. The Department has targeted 30 bridges for its accelerated repair/replacement program, and plans to ask the California Transportation Commission to add 30 more to the fast-track list later this year.

83.5 percent of all bridge deck areas, measured in square feet, should be in good condition, according to the plan, with 15 percent in fair condition and no more than 1.5 percent of all deck areas designated as poor condition.

Currently, about 97 percent of the bridge deck areas of spans within the state highway system are rated in good or fair condition, and 3 percent as poor. Poor condition does not mean the bridge is unsafe, but falls below acceptable standards. Any Caltrans transportation asset, such as bridges, found to be unsafe would be immediately closed and repaired.

Caltrans and the California Transportation Commission (CTC) is already moving to improve those numbers. With SB 1 revenue soon to arrive, the CTC earlier agreed to fast-track the planning process for improvements to 30 bridges on Interstates 5 and 80, the state’s busiest freight routes. Caltrans plans to propose another 30 bridges for its priority delivery list at the October CTC meeting.

For smaller projects, Caltrans crews focus on preventative maintenance to keep bridge decks in good condition, and perform repairs on those structures that fall into the fair category. Bridges with structural deterioration, or deck/superstructure/substructure areas rated in poor condition, must undergo major rehabilitation or replacement through Caltrans’ State Highway Operation and Protec-

tion Program (SHOPP). It’s estimated that meeting bridge deck area performance targets under the Bridge Health objective will cost \$6.1 billion over the next decade.

Bridge inspections are carried out by Caltrans through the federal National Bridge Inspection Program, which requires routine inspections typically once every two years for bridges that are a part of the federal-aid highway system. About \$35 million was spent in the 2016-17 fiscal year on inspections, with the federal government paying about \$24 million of that amount. **MM**

Source: Rita Gerlach, Bridge Maintenance Information Manager, Structure Maintenance and Investigations; John Gillis, Bridge Asset Management

State and Local Bridge Inspections, FY 16-17

Quarter	Routine Inspections	Fracture Critical Inspections	Underwater Inspections
2016-17, Q1	2,708	123	29
2016-17, Q2	2,721	126	14
2016-17, Q3	3,373	78	39
2016-17, Q4	2,628	138	13
Total	11,430	465	95